

CLAIMS:

1. A method for fabricating a semiconductor device, comprising:

preparing a semiconductor substrate having a contact pad;

forming a first insulating film having a storage node contact exposing the contact pad

5 and having a stack structure of an upper interlayer insulating film, a bottom interlayer insulating film, and an etching stopper that is between the upper and bottom interlayer insulating films and that protrudes into the storage node contact;

forming a first conductive film for a storage node on the substrate;

10 forming a second insulating film with a recessed portion corresponding to a surface of the storage node contact;

forming an etching mask layer on the recessed portion;

etching the second insulating film using the etching mask layer;

forming a second conductive film for a storage node on the substrate;

etching the first and second conductive films to isolate nodes; and

15 removing the etching mask layer, the second insulating film, and the upper interlayer insulating film.

2. The method according to claim 1, wherein the second insulating film is a film

20 that copies an undulation of the second insulating film produced by the storage node contact on the surface of the second insulating film, thereby recessing the portion of the surface of the second insulating film corresponding to the storage node contact.

3. The method according to claim 2, wherein the second insulating film

25 comprises one chosen from the group consisting of a plasma oxide film and a high-density plasma oxide film.

4. The method according to claim 1, wherein forming the etching mask layer on the recessed portion comprises forming a nitride film.

30 5. The method according to claim 1, wherein forming the etching mask layer on the recessed portion comprises:

depositing a first etching mask material on the second insulating film to fill the recessed portion of the second insulating film; and

etching the first etching mask material to remain at the recessed portion of the second insulating film.

6. The method according to claim 5, wherein etching the first etching mask material comprises etching with a CMP process that uses the second insulating film as an etching end point.

7. The method according to claim 5, wherein forming the etching mask layer on the recessed portion further comprises:
dry-etching the second insulating film using the first etching mask material;
wet-etching the second insulating film using the first etching mask material;
depositing a second etching mask material on the substrate; and
etching the second etching mask material to remain on an edge portion of the first etching mask material.

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8. The method according to claim 7, wherein the second etching mask material acts as a support for the first etching mask material.

9. The method according to claim 7, wherein etching the second etching mask material comprises etching with an etch back process that uses the second insulating film as an etching end point.

10. The method according to claim 7, wherein the second insulating film comprises an oxide film and the first and second etching mask materials comprise a nitride film.

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11. The method according to claim 7, wherein a surface dimension of the storage node is determined by a deposition thickness of the second etching mask material.

12. The method according to claim 7, wherein the second insulating layer is etched to a thickness of about 100 to 300Å within the extent that the first etching mask material is not lifted.

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13. The method according to claim 1, wherein etching the second insulating film using the etching mask layer comprises etching until the first conductive film for a storage node is exposed.

5 14. The method according to claim 1, wherein forming the first conductive film for a storage node comprises forming a conductive material to a minimum thickness, preferably about 200 to 400Å, so as not to completely fill the storage node contact.